



May 30, 2019

Mr. Kevin Lawrence
Desert View Power
62-300 Gene Welmas Drive
Mecca, CA 92254-0758

Subject: Quarterly CGA Units 1 and 2
Report Number: 002AS-541589-RT-1548

Dear Kevin:

This letter presents the results of the Continuous Emission Monitoring System (CEMS) quarterly test audit conducted by Dave Wonderly of Montrose Air Quality Services, LLC (MAQS), on May 24, 2019. MAQS was contracted by Desert View Power to perform this audit. The program consists of a Cylinder Gas Audit (CGA) for unit 1 and 2 on the NO_x, CO, SO₂, and O₂ monitors in accordance with 40 CFR Part 60 Appendix F Section 5.1.2.

The CGA comprised of challenging the entire unit CEMS, as close to the tip of the probe as possible, with NBS traceable gases of known concentration. The gases were injected at the probe through previously installed audit ports.

Two audit gases per monitor range were selected according to the requirements of Appendix F. Each monitor was challenged by each of its two gases three separate times. The accuracy was calculated two ways. By the percent difference between the actual known gas concentration and the average value read by the monitor, and the difference in ppm from actual known gas concentration and the average value read by the monitor. Results are shown in the attached tables (Tables 1 and 2).

The results of the CGA demonstrate that the CEMS was operating within the EPA quality assurance specification of either 15% accuracy or 5 ppm difference for all parameters. All data, including gas bottle certifications and monitor response data sheets, are provided as an attachment. If you have any questions or comments, please do not hesitate to call me at 714-279-6777.

Sincerely,

A handwritten signature in black ink that reads "Dave Wonderly".

Dave Wonderly
Program Manager
Montrose Air Quality Services, LLC.
DW/rcr
Attachments

Montrose Santa Ana Office
1631 E. St. Andrew Pl.
Santa Ana, California 92705
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Global Headquarters
1 Park Plaza, Suite 1000
Irvine, CA 92614
T: 949.988.3500

TABLE 1
CYLINDER GAS AUDIT RESULTS
UNIT 1
Desert View Power
May 24, 2019

Parameter	Accuracy, % of Gas Value	Accuracy Acceptance Criteria	Difference From Gas Value, ppm	Difference Acceptance Criteria	Status*
SO ₂ Low Range (mid span)	-5.2%	15%	-1.40	5 ppm	Pass
SO ₂ Low range (low span)	-8.1%	15%	-1.01	5 ppm	Pass
NO _x Low range (mid span)	0.8%	15%	0.43	5 ppm	Pass
NO _x Low range (low span)	5.7%	15%	1.40	5 ppm	Pass
CO Low Range (mid span)	0.2%	15%	0.10	5 ppm	Pass
CO Low Range (low span)	0.3%	15%	0.09	5 ppm	Pass
O ₂ (mid span)	0.9%	15%	N/A	N/A	Pass
O ₂ (low span)	1.0%	15%	N/A	N/A	Pass
SO ₂ High Range (mid span)	-0.3%	15%	-0.95	5 ppm	Pass
SO ₂ High Range (low span)	2.7%	15%	3.42	5 ppm	Pass
NO _x High Range (mid span)	-2.1%	15%	-5.95	5 ppm	Pass
NO _x High Range (low span)	2.1%	15%	2.67	5 ppm	Pass
CO High Range (mid span)	2.1%	15%	5.74	5 ppm	Pass
CO High Range (low span)	5.4%	15%	6.71	5 ppm	Pass

* Pass if accuracy less than 15% or within 5 ppm and O₂ accuracy is less than 15%

TABLE 2
CYLINDER GAS AUDIT RESULTS
UNIT 2
Desert View Power
May 24, 2019

Parameter	Accuracy, % of Gas Value	Accuracy Acceptance Criteria	Difference From Gas Value, ppm	Difference Acceptance Criteria	Status*
SO ₂ Low Range (mid span)	-8.5%	15%	-2.30	5 ppm	Pass
SO ₂ Low range (low span)	-17.7%	15%	-2.21	5 ppm	Pass
NO _x Low range (mid span)	1.8%	15%	225.83	5 ppm	Pass
NO _x Low range (low span)	4.6%	15%	1.13	5 ppm	Pass
CO Low Range (mid span)	1.5%	15%	0.83	5 ppm	Pass
CO Low Range (low span)	2.9%	15%	0.72	5 ppm	Pass
O ₂ (mid span)	0.6%	15%	NA	NA	Pass
O ₂ (low span)	1.0%	15%	NA	NA	Pass
SO ₂ High Range (mid span)	-0.4%	15%	-1.09	5 ppm	Pass
SO ₂ High Range (low span)	2.1%	15%	2.58	5 ppm	Pass
NO _x High Range (mid span)	1.6%	15%	4.58	5 ppm	Pass
NO _x High Range (low span)	2.9%	15%	3.77	5 ppm	Pass
CO High Range (mid span)	2.8%	15%	7.57	5 ppm	Pass
CO High Range (low span)	6.2%	15%	7.65	5 ppm	Pass

* Pass if accuracy less than 15% or within 5 ppm and O₂ accuracy is less than 15%

CYLINDER GAS AUDIT WORK SHEET

Client: Desert View Power
Location: Mecca

Unit No: 1
Data By: DW

Date: 5/24/2019

NORMAL RANGE

	NOx ppm		CO ppm		SO2 ppm		O2 %	
Reference Gas	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2
Concentration	24.7	55.5	25	55	12.5	27.1	5.52	10.11
Replicate								
1	26.22	55.72	24.80	54.93	10.62	25.17	5.57	10.18
2	25.91	56.12	25.46	55.07	11.76	25.60	5.58	10.20
3	26.16	55.94	25.00	55.29	12.08	26.34	5.57	10.21
Average	26.10	55.93	25.09	55.10	11.49	25.70	5.57	10.20
Difference, ppm	1.40	0.43	0.09	0.10	-1.01	-1.40	n/a	n/a
Accuracy	5.7%	0.8%	0.3%	0.2%	-8.1%	-5.2%	1.0%	0.9%

Client: Desert View Power
Location: Mecca
Date: 5/24/2019

Unit No: 1
Data By: DW

HIGH RANGE

	NOx ppm		CO ppm		SO2 ppm	
Reference Gas	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2
Concentration	128.5	282	123.3	274	125	277.0
Replicate						
1	130.49	274.20	129.15	279.24	123.89	274.20
2	131.15	276.50	130.13	279.60	130.31	276.50
3	131.87	277.45	130.76	280.37	131.05	277.45
Average	131.17	276.05	130.01	279.74	128.42	276.05
Difference, ppm	2.67	-5.95	6.71	5.74	3.42	-0.95
Accuracy	2.1%	-2.1%	5.4%	2.1%	2.7%	-0.3%

Client: Desert View Power
Location: Mecca
Date: 5/24/2019

Unit No: 2
Data By: DW

CYLINDER GAS AUDIT WORK SHEET

NORMAL RANGE

	NOx ppm		CO ppm		SO2 ppm		O2 %	
Reference Gas	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2
Concentration	24.7	55.5	25	55	12.5	27.1	5.52	10.11
Replicate								
1	25.51	56.25	25.64	55.74	9.38	24.47	5.56	10.18
2	25.95	56.87	25.69	55.83	10.62	24.70	5.59	10.17
3	26.02	56.37	25.83	55.92	10.86	25.22	5.57	10.16
	55.63							
Average	25.83	281.33	25.72	55.83	10.29	24.80	5.57	10.17
Difference, ppm	1.13	225.83	0.72	0.83	-2.21	-2.30	n/a	n/a
Accuracy	4.6%	1.8%	2.9%	1.5%	-17.7%	-8.5%	1.0%	0.6%

Client: Desert View Power
Location: Mecca
Date: 5/24/2019

Unit No: 2
Data By: DW

HIGH RANGE

	NOx ppm		CO ppm		SO2 ppm	
Reference Gas	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2
Concentration	128.5	282	123.3	274	125	277.0
Replicate						
1	131.72	286.35	130.47	281.33	121.39	272.92
2	132.38	286.50	131.10	281.53	129.88	276.58
3	132.72	286.89	131.29	281.85	131.48	278.22
Average	132.27	286.58	130.95	281.57	127.58	275.91
Difference, ppm	3.77	4.58	7.65	7.57	2.58	-1.09
Accuracy	2.9%	1.6%	6.2%	2.8%	2.1%	-0.4%

CYLINDER GAS AUDIT

WORK SHEET

CeDAR 1-Minute Data

Data for 5/24/2019 7:08 AM thru 5/24/2019 8:18 AM

Timestamp	(Boiler 1) NOx ppm 1-Min	(Boiler 1) SO2 ppm 1-Min	(Boiler 1) CO ppm 1-Min	(Boiler 1) O2% 1- Min	(Boiler 2) NOx ppm 1-Min	(Boiler 2) SO2 ppm 1-Min	(Boiler 2) CO ppm 1-Min	(Boiler 2) O2% 1- Min
5/24/2019 7:17	3.26	0.13	0.19	5.67	0.41	0	0.2	5.56
5/24/2019 7:18	0.96	0	0.22	5.57	0.58	0	0.22	5.56
5/24/2019 7:19	1.16	0	0.2	6.3	0.43	0	0.33	5.91
5/24/2019 7:20	4.65	0	0.49	10.09	0.72	0	0.24	10.12
5/24/2019 7:21	3.95	0.03	0.54	10.18	0.92	0	0.37	10.18
5/24/2019 7:22	1.63	0	0.56	10.21	1.16	0	0.26	10.17
5/24/2019 7:23	1.3	0	0.41	8.3	0.94	0	0.26	9.17
5/24/2019 7:24	0.66	0	0.21	5.58	0.37	0	0.12	5.59
5/24/2019 7:25	0.89	0	0.17	7.43	0.35	0	0.2	6.94
5/24/2019 7:26	1.31	0	0.52	10.2	0.69	0	0.22	10.17
5/24/2019 7:27	1.51	0	0.28	8.77	1.06	0	0.27	9.25
5/24/2019 7:28	0.76	0	0	5.58	0.5	0	0.09	5.58
5/24/2019 7:29	0.38	0	0	5.57	0.25	0	0.11	5.57
5/24/2019 7:30	0.29	0	0.08	7.03	0.01	0	0.08	6.53
5/24/2019 7:31	1.27	0	0.36	10.21	0.87	0	0.16	10.16
5/24/2019 7:32	3.9	0.02	3.61	6.8	2.28	0	1.57	7.76
5/24/2019 7:33	24.29	7.47	23.97	0.05	24.21	5.5	24.13	0.09
5/24/2019 7:34	25.5	9.66	24.52	0.02	25.43	8.54	25.45	0.05
5/24/2019 7:35	25.92	10.26	24.74	0	25.58	9.17	25.47	0.03
5/24/2019 7:36	26.22	10.62	24.8	0	25.51	9.38	25.64	0.03
5/24/2019 7:37	30.34	13.73	31.92	0	29.21	11.36	29.54	0.02
5/24/2019 7:38	55.6	24.12	54.71	0	55.51	23.04	55.29	0.02
5/24/2019 7:39	55.72	25.17	54.93	0	56.25	24.47	55.74	0.02
5/24/2019 7:40	53.42	23.73	50.92	0	55.04	24.12	54.39	0.01
5/24/2019 7:41	27.55	12.87	25.4	0	27.36	12.75	27.38	0.02
5/24/2019 7:42	26.15	11.74	25	0	25.64	10.99	25.77	0.02
5/24/2019 7:43	26.03	11.53	24.98	0	25.72	10.69	25.71	0.01
5/24/2019 7:44	25.91	11.76	25.46	0	25.95	10.62	25.69	0.01
5/24/2019 7:45	50.35	23.03	51.86	0	49.93	20.61	49.36	0.01
5/24/2019 7:46	56.12	25.6	55.07	0	56.87	24.7	55.83	0
5/24/2019 7:47	54.15	24.42	51.95	0	55.88	24.76	54.87	0
5/24/2019 7:48	28.29	13.25	25.79	0	28.21	13.27	27.96	0
5/24/2019 7:49	26.32	11.99	25.09	0	26.14	11.1	25.86	0.01
5/24/2019 7:50	26.16	12.08	25	0	26.02	10.86	25.83	0.01
5/24/2019 7:51	32.56	16.05	33.91	0	31.51	12.99	31.04	0.01
5/24/2019 7:52	55.74	25.62	55.11	0	56.07	24.13	55.63	0
5/24/2019 7:53	55.94	26.34	55.29	0	56.37	25.22	55.92	0
5/24/2019 7:54	64.21	47.65	68.38	0	61.68	34.79	61.39	0
5/24/2019 7:55	127.68	119.51	128.36	0	128.81	113.56	128	0
5/24/2019 7:56	130.49	123.89	129.15	0	131.72	121.39	130.47	0

CYLINDER GAS AUDIT

WORK SHEET

5/24/2019 7:57	150.23	160.75	157.48	0	145.32	141.75	143.83	0.01
5/24/2019 7:58	281.9	268.3	277.91	0	281.29	262.92	277.14	0
5/24/2019 7:59	286.39	274.2	279.24	0	286.35	272.92	281.33	0
5/24/2019 8:00	284.41	267.75	276.04	0	285.98	274.48	281.33	0.01
5/24/2019 8:01	156.95	143.11	143.36	0	161.79	156.92	159.15	0
5/24/2019 8:02	131.35	131.79	130.28	0	132.44	132.06	131.09	0
5/24/2019 8:03	131.15	130.31	130.13	0	132.38	129.88	131.1	0
5/24/2019 8:04	169.35	191.44	183.02	0	161.68	168.31	161.03	0
5/24/2019 8:05	275.43	270.74	275.13	0	273.43	263.37	269.41	0
5/24/2019 8:06	286.94	276.5	279.6	0	286.5	276.58	281.53	0.01
5/24/2019 8:07	267.05	240.76	251.32	0	272.85	258.37	267.81	0
5/24/2019 8:08	136.51	136.63	131.69	0	137.11	141.29	135.4	0
5/24/2019 8:09	132.05	132.23	130.82	0	132.77	133.21	131.33	0
5/24/2019 8:10	131.87	131.05	130.76	0	132.72	131.48	131.29	0
5/24/2019 8:11	154.38	171.52	162.95	0	148.41	153.69	147.38	0
5/24/2019 8:12	283.76	273.09	279.45	0	283.58	270.38	278.68	0
5/24/2019 8:13	287.11	277.45	280.37	0	286.89	278.22	281.85	0
5/24/2019 8:14	287.5	279.02	280.68	0	287.12	280.25	282.16	0

Client: **Desert View Power**Location: **Mecca**Date: **5/24/2019**Unit No: **Boiler 1&2**Data By: **Dave Wonderly**

Instrument		NOx ppm Low Range		SO2 ppm Low Range		O2 %		CO ppm Low Range	
Range		100		50		25		100	
Gas Specification		Point 1	Point 2	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2
Min		20	50	20	50	4	8	20	50
Max		30	60	30	60	6	12	30	60
Units		% FS	% FS	% FS	% FS	% O2	% O2	% FS	% FS
Gas Requirement		ppm NOx	ppm NOx	ppm SO2	ppm SO2	% O2	% O2	ppm CO	ppm CO
Min		20	50	10	25	4	8	20	50
Max		30	60	15	30	6	12	30	60
Gas Used		24.7	55.5	12.5	27.1	5.52	10.11	25	55
% of Range		25%	56%	25%	54%	22%	40%	25%	55%
Status		OK	OK	OK	OK	OK	OK	OK	OK
Cylinder No.		CC499373	CC31709	CC499373	CC31709	EB0022954	CC35521	CC499373	CC31709

Instrument		NOx ppm High Range		SO2 ppm High Range		CO ppm High Range	
Range		500		500		500	
Gas Specification		Point 1	Point 2	Point 1	Point 2	Point 1	Point 2
Min		20	50	20	50	20	50
Max		30	60	30	60	30	60
Units		% FS	% FS	% FS	% FS	% FS	% FS
Gas Requirement		ppm NOx	ppm NOx	ppm SO2	ppm SO2	ppm CO	ppm CO
Min		100	250	100	250	100	250
Max		150	300	150	300	150	300
Gas Used		128.5	282	125	277	123.3	274
% of Range		26%	56%	25%	55%	25%	55%
Status		OK	OK	OK	OK	OK	OK
Cylinder No.		CC74949	CC169801	CC74949	CC169801	CC74949	CC169801



Praxair
 5700 South Alameda Street
 Los Angeles, CA 90058
 Tel: (323) 585-2154 Fax: (714) 542-6689
 PGVPID: F22018

DocNumber: 000120028

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS



Montrose Air Quality Services, LLC
 1631 E. St. Andrew Pl.
 Santa Ana, CA 92705

Praxair Order Number: 70480156
 Customer P. O. Number:
 Customer Reference Number:

Fill Date: 1/29/2018
 Part Number: NI CO25MNS11EAS
 Lot Number: 70086802906
 Cylinder Style & Outlet: AS CGA 660
 Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	2/9/2021	NIST Traceable
Cylinder Number:	CC499373	Analytical Uncertainty:
25.0 ppm	CARBON MONOXIDE	± 0.8 %
24.7 ppm	NITRIC OXIDE	± 0.7 %
12.5 ppm	SULFUR DIOXIDE	± 1.7 %
Balance	NITROGEN	

NOx = 24.9 ppm

NOx for Reference Only

CO-25.0
 NO-24.7
 SO₂-12.5
 CC499373
 Exp. 2/9/21
 F22018

Certification Information: Certification Date: 2/9/2018 Term: 36 Months Expiration Date: 2/9/2021

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: CARBON MONOXIDE

Requested Concentration: 25 ppm
 Certified Concentration: 25.0 ppm
 Instrument Used: Horiba VIA-510 S/N 576876015
 Analytical Method: NDIR
 Last Multipoint Calibration: 1/15/2018

First Analysis Data: Date: 2/2/2018
 Z: 0 R: 25.2 C: 24.9 Conc: 24.933
 R: 25.3 Z: 0 C: 25 Conc: 25.033
 Z: 0 C: 25 R: 25.3 Conc: 25.033
 UOM: ppm Mean Test Assay: 25 ppm

Reference Standard Type: GMS
 Ref. Std. Cylinder #: ALM-035595
 Ref. Std. Conc: 25.3 ppm
 Ref. Std. Traceable to SRM #: 2635a
 SRM Sample #: 58-E-34
 SRM Cylinder #: FF10666

Second Analysis Data: Date:
 Z: 0 R: 0 C: 0 Conc: 0
 R: 0 Z: 0 C: 0 Conc: 0
 Z: 0 C: 0 R: 0 Conc: 0
 UOM: ppm Mean Test Assay: 0 ppm

2. Component: NITRIC OXIDE

Requested Concentration: 25 ppm
 Certified Concentration: 24.7 ppm
 Instrument Used: Thermo Electron 42i-LS S/N 1030645077
 Analytical Method: Chemiluminescence
 Last Multipoint Calibration: 1/12/2018

First Analysis Data: Date: 2/2/2018
 Z: 0 R: 51 C: 24.7 Conc: 24.7
 R: 51 Z: 0 C: 24.8 Conc: 24.8
 Z: 0 C: 24.8 R: 51 Conc: 24.8
 UOM: ppm Mean Test Assay: 24.767 ppm

Reference Standard Type: SRM
 Ref. Std. Cylinder #: CC2852
 Ref. Std. Conc: 51.00 ppm
 Ref. Std. Traceable to SRM #: 1683b
 SRM Sample #: 45-V-42
 SRM Cylinder #: CAL017897

Second Analysis Data: Date: 2/9/2018
 Z: 0 R: 51 C: 24.6 Conc: 24.648
 R: 50.8 Z: 0 C: 24.5 Conc: 24.548
 Z: 0 C: 24.5 R: 50.9 Conc: 24.548
 UOM: ppm Mean Test Assay: 24.582 ppm

3. Component: SULFUR DIOXIDE

Requested Concentration: 12 ppm
 Certified Concentration: 12.5 ppm
 Instrument Used: Ametek 921CE S/N AW-921-S321
 Analytical Method: Ultraviolet Absorption
 Last Multipoint Calibration: 1/16/2018

First Analysis Data: Date: 2/2/2018
 Z: 0 R: 99.8 C: 122.3 Conc: 12.375
 R: 101.6 Z: 0 C: 123.1 Conc: 12.456
 Z: 0 C: 122.7 R: 101.3 Conc: 12.416
 UOM: ppm Mean Test Assay: 12.416 ppm

Reference Standard Type: GMS
 Ref. Std. Cylinder #: CC423833
 Ref. Std. Conc: 10.21 ppm
 Ref. Std. Traceable to SRM #: PRM#C1194
 SRM Sample #: C1194310
 SRM Cylinder #: D506172

Second Analysis Data: Date: 2/9/2018
 Z: 0 R: 101.5 C: 124.3 Conc: 12.512
 R: 101.6 Z: 0 C: 124.2 Conc: 12.502
 Z: 0 C: 124.9 R: 101.2 Conc: 12.572
 UOM: ppm Mean Test Assay: 12.528 ppm

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.

2-25-18

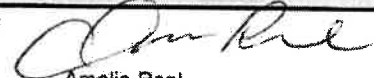
DocNumber: 000120028

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Analyzed by:


Henry Koung

Certified by:


Amalia Real



Praxair
 5700 South Alameda Street
 Los Angeles, CA 90058
 Tel: (323) 585-2154 Fax: (714) 542-6689
 PGVPID: F22018

DocNumber: 000120030

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS



Montrose Air Quality Services, LLC
 1631 E. St. Andrew Pl.
 Santa Ana, CA 92705

Praxair Order Number: 70480156
 Customer P. O. Number:
 Customer Reference Number:

Fill Date: 1/25/2018
 Part Number: NI CO55MNS10EAS
 Lot Number: 70086802503
 Cylinder Style & Outlet: AS CGA 660
 Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	2/7/2022	NIST Traceable
Cylinder Number:	CC31709	Analytical Uncertainty:
55.0 ppm	CARBON MONOXIDE	± 0.6 %
55.5 ppm	NITRIC OXIDE	± 0.7 %
27.1 ppm	SULFUR DIOXIDE	± 1 %
Balance	NITROGEN	

NOx = 55.6 ppm

NOx for Reference Only

CO-55.0
 NO-55.5
 SO₂-27.1
 CC31709
 Exp. 2/7/22
 F22018

Certification Information: Certification Date: 2/7/2018 Term: 48 Months Expiration Date: 2/7/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: CARBON MONOXIDE

Requested Concentration: 55 ppm
 Certified Concentration: 55.0 ppm
 Instrument Used: Horiba VIA-510 S/N 576876015
 Analytical Method: NDIR
 Last Multipoint Calibration: 1/15/2018

Reference Standard Type: GMIS
 Ref. Std. Cylinder #: CC186877
 Ref. Std. Conc: 50.3 ppm
 Ref. Std. Traceable to SRM #: 1678c
 SRM Sample #: 04-I-41
 SRM Cylinder #: FF18402

First Analysis Data:		Date: 1/31/2018	
Z: 0	R: 50.2	C: 55	Conc: 55
R: 50.4	Z: 0	C: 55.1	Conc: 55.1
Z: 0	C: 55	R: 50.3	Conc: 55
UOM: ppm	Mean Test Assay:	55.033 ppm	

Second Analysis Data:		Date:	
Z: 0	R: 0	C: 0	Conc: 0
R: 0	Z: 0	C: 0	Conc: 0
Z: 0	C: 0	R: 0	Conc: 0
UOM: ppm	Mean Test Assay:	0 ppm	

2. Component: NITRIC OXIDE

Requested Concentration: 55 ppm
 Certified Concentration: 55.5 ppm
 Instrument Used: Thermo Electron 42i-LS S/N 1030645077
 Analytical Method: Chemiluminescence
 Last Multipoint Calibration: 1/12/2018

Reference Standard Type: SRM
 Ref. Std. Cylinder #: CC2852
 Ref. Std. Conc: 51.00 ppm
 Ref. Std. Traceable to SRM #: 1683b
 SRM Sample #: 45-V-42
 SRM Cylinder #: CAL017897

First Analysis Data:		Date: 1/31/2018	
Z: 0	R: 51	C: 55.4	Conc: 55.4
R: 51	Z: 0	C: 55.5	Conc: 55.5
Z: 0	C: 55.5	R: 51	Conc: 55.5
UOM: ppm	Mean Test Assay:	55.467 ppm	

Second Analysis Data:		Date: 2/7/2018	
Z: 0	R: 51	C: 55.5	Conc: 55.573
R: 50.9	Z: 0	C: 55.4	Conc: 55.473
Z: 0	C: 55.4	R: 50.9	Conc: 55.473
UOM: ppm	Mean Test Assay:	55.506 ppm	

3. Component: SULFUR DIOXIDE

Requested Concentration: 27 ppm
 Certified Concentration: 27.1 ppm
 Instrument Used: Ametek 921CE S/N AW-921-S321
 Analytical Method: Ultraviolet Absorption
 Last Multipoint Calibration: 1/16/2018

Reference Standard Type: NTRM
 Ref. Std. Cylinder #: CC72598
 Ref. Std. Conc: 48.58 ppm
 Ref. Std. Traceable to SRM #: NTRM12070
 SRM Sample #: JOB NO.16055
 SRM Cylinder #: N/A

First Analysis Data:		Date: 1/31/2018	
Z: 0	R: 48.6	C: 27.1	Conc: 27.052
R: 48.7	Z: 0	C: 27.3	Conc: 27.251
Z: 0	C: 27.2	R: 48.7	Conc: 27.152
UOM: ppm	Mean Test Assay:	27.152 ppm	

Second Analysis Data:		Date: 2/7/2018	
Z: 0	R: 48.9	C: 27.2	Conc: 27.04
R: 48.8	Z: 0	C: 27.2	Conc: 27.04
Z: 0	C: 27.2	R: 48.9	Conc: 27.04
UOM: ppm	Mean Test Assay:	27.04 ppm	

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.

JD
 2-25-18



Praxair
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Los Angeles, CA 90058
Tel: (323) 585-2154 Fax: (714) 542-6689
PGVPID: F22018

DocNumber: 000120030

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Analyzed by:

Henry Koung

Certified by:

Amalia Real

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DocNumber: 000119814

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 PGVP ID: F22018

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Montrose Air Quality Services, LLC
 1631 E. St. Andrew Pl.
 Santa Ana, CA 92705

Praxair Order Number: 70478952
 Customer PO Number:
 Customer Reference Number:

Fill Date: 1/25/2018
 Part Number: NI CO125NS4E-AS
 Lot Number: 70086802507
 Cylinder Style and Outlet: AS CGA 560
 Cylinder Pressure and Volume: 2000 psig 140 cu. ft.

CO-123.3 ppm
 NOx-128.5 ppm
 SO2-125.0 ppm
 CC74949
 EXP-2-5-26
 F22018

Certified Concentration:

Expiration Date:	02/05/2026	NIST Traceable
Cylinder Number:	CC74949	Expanded Uncertainty:
123.3 ppm	CARBON MONOXIDE	± 0.4 %
128.5 ppm	NITRIC OXIDE	± 0.7 %
125 ppm	SULFUR DIOXIDE	± 1.0 %
Balance	NITROGEN	

NOx ppm = 128.5 ppm

NOX for Reference Only

Certification Information: Certification Date: 2/5/2018 Term: 96 Months Expiration Date: 02/05/2026

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
 Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component:**CARBON MONOXIDE**

Requested Concentration: 125 ppm
 Certified Concentration: 123.3 ppm
 Instrument Used: HORIBA, VIA-510 576 876 015
 Analytical Method: NDIR
 Last Multipoint Calibration: 01/02/2018

First Analysis Data:		Date: 01/29/2015	
Z:	0	R:	102.2
R:	102.3	Z:	0
Z:	0	C:	123.5
C:	123.3	R:	123.3
UOM:	ppm	Mean Test Assay:	123.3 ppm

Reference Standard Type:

GMS

Ref. Std. Cylinder #: CC243560
 Ref. Std. Conc: 102.2 ppm
 Ref. Std. traceable to SRM #: 1679c
 SRM Sample #: 3-445
 SRM Cylinder #: FF28593

Second Analysis Data:		Date:	
Z:	0	R:	0
R:	0	Z:	0
Z:	0	C:	0
C:	0	R:	0
UOM:	ppm	Mean Test Assay:	0 ppm

2. Component:**NITRIC OXIDE**

Requested Concentration: 125 ppm
 Certified Concentration: 128.5 ppm
 Instrument Used: Thermo Electron 42i S/N 072602432C
 Analytical Method: Chemiluminescence
 Last Multipoint Calibration: 01/29/2018

First Analysis Data:		Date: 01/29/2018	
Z:	0	R:	100.4
R:	100.4	Z:	0
Z:	0	C:	128.3
C:	128.3	R:	100.4
UOM:	ppm	Mean Test Assay:	128.3 ppm

Reference Standard Type:

NTRM

Ref. Std. Cylinder #: CC338497
 Ref. Std. Conc: 100.4 ppm
 Ref. Std. traceable to SRM #: 1684b
 SRM Sample #: 44-T-83
 SRM Cylinder #: FF9258

Second Analysis Data:		Date: 02/05/2018	
Z:	0	R:	100.4
R:	100.3	Z:	0
Z:	0	C:	128.7
C:	128.7	R:	100.3
UOM:	ppm	Mean Test Assay:	128.8 ppm

3. Component:**SULFUR DIOXIDE**

Requested Concentration: 125 ppm
 Certified Concentration: 125 ppm
 Instrument Used: HORIBA, VIA-510, 5203551011
 Analytical Method: NDIR
 Last Multipoint Calibration: 01/27/2018

First Analysis Data:		Date: 01/29/2018	
Z:	0	R:	95.2
R:	95.3	Z:	0
Z:	0	C:	125.4
C:	125.4	R:	95.3
UOM:	ppm	Mean Test Assay:	125.3 ppm

Reference Standard Type:

NTRM

Ref. Std. Cylinder #: SA15531
 Ref. Std. Conc: 95.17 ppm
 Ref. Std. traceable to SRM #: 120702
 SRM Sample #: 12070204
 SRM Cylinder #:

Second Analysis Data:		Date: 02/05/2018	
Z:	0	R:	95.2
R:	95.1	Z:	0
Z:	0	C:	124.6
C:	124.6	R:	95.1
UOM:	ppm	Mean Test Assay:	124.7 ppm

Analyzed by:

Leeanna Rodriguez
 Leeanna Rodriguez

Certified by:

Quinn Hailes
 Quinn Hailes

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DocNumber: 000119815

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 5700 South Alameda Street
 Los Angeles, CA 90058
 Tel:(323)585-2154 Fax:(714)542-6689
 PGVP ID: F22018

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Montrose Air Quality Services, LLC
 1631 E. St. Andrew Pl.
 Santa Ana, CA 92705

Praxair Order Number: 70478952

Customer PO Number:

Customer Reference Number:

Fill Date: 1/25/2018

Part Number: NI CO275NS1E-AS

Lot Number: 70086802508

Cylinder Style and Outlet: AS CGA 680

Cylinder Pressure and Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	02/05/2026	NIST Traceable
Cylinder Number:	CC169801	Expanded Uncertainty:
274 ppm	CARBON MONOXIDE	± 0.7 %
282 ppm	NITRIC OXIDE	± 0.3 %
277 ppm	SULFUR DIOXIDE	± 0.6 %
Balance	NITROGEN	

NOx ppm = 282 ppm

NOX for Reference Only

CO-274 ppm
 NOx-282 ppm
 SO₂-277 ppm
 CC169801

EXP-2-5-26

Certification Information: Certification Date: 2/5/2018 Term: 96 Months Expiration Date: 02/05/2026
 This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
 Do Not Use this Standard if Pressure is less than 100 PSIG.

F22018

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component:**CARBON MONOXIDE**

Requested Concentration: 275 ppm
 Certified Concentration: 274 ppm
 Instrument Used: HORIBA, VIA 510 576 876 015
 Analytical Method: NDIR
 Last Multipoint Calibration: 01/02/2018

First Analysis Data:		Date: 01/29/2015	
Z:	0	R:	248.5
R:	248.4	Z:	0
Z:	0	C:	274
C:	274	R:	248.4
UOM:	ppm	Mean Test Assay:	274 ppm

Reference Standard Type:

GMIS

Ref. Std. Cylinder #: CC243385
 Ref. Std. Conc: 248.5 ppm
 Ref. Std. traceable to SRM #: 2636a
 SRM Sample #: 57-E-28
 SRM Cylinder #: FF23380

Second Analysis Data:		Date:	
Z:	0	R:	0
R:	0	Z:	0
Z:	0	C:	0
C:	0	R:	0
UOM:	ppm	Mean Test Assay:	0 ppm

2. Component:**NITRIC OXIDE**

Requested Concentration: 275 ppm
 Certified Concentration: 282 ppm
 Instrument Used: Thermo Electron 42i S/N 072602432C
 Analytical Method: Chemiluminescence
 Last Multipoint Calibration: 01/29/2018

First Analysis Data:		Date: 01/29/2018	
Z:	0	R:	253
R:	253	Z:	0
Z:	0	C:	284
C:	284	R:	253
UOM:	ppm	Mean Test Assay:	283 ppm

Reference Standard Type:

GMIS

Ref. Std. Cylinder #: CC2744
 Ref. Std. Conc: 253.2 ppm
 Ref. Std. traceable to SRM #: 1685b
 SRM Sample #: 43-M-28
 SRM Cylinder #: FF20734

Second Analysis Data:		Date: 02/05/2018	
Z:	0	R:	253
R:	254	Z:	0
Z:	0	C:	282
C:	282	R:	254
UOM:	ppm	Mean Test Assay:	281 ppm

3. Component:**SULFUR DIOXIDE**

Requested Concentration: 276 ppm
 Certified Concentration: 277 ppm
 Instrument Used: HORIBA, VIA-510, 5203551011
 Analytical Method: NDIR
 Last Multipoint Calibration: 01/27/2018

First Analysis Data:		Date: 01/29/2018	
Z:	0	R:	495.4
R:	495.4	Z:	0
Z:	0	C:	276.6
C:	276.6	R:	495.4
UOM:	ppm	Mean Test Assay:	276 ppm

Reference Standard Type:

GMIS

Ref. Std. Cylinder #: CC121190
 Ref. Std. Conc: 495.4 ppm
 Ref. Std. traceable to SRM #: 1661a
 SRM Sample #: 94-L-18
 SRM Cylinder #: FF22304

Second Analysis Data:		Date: 02/05/2018	
Z:	0	R:	495.4
R:	495.2	Z:	0
Z:	0	C:	276.6
C:	276.6	R:	495.2
UOM:	ppm	Mean Test Assay:	277 ppm

Analyzed by:

Leeanna Rodriguez
 Leeanna Rodriguez

Certified by:

Quinn Hailes
 Quinn Hailes

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OF ANALYSIS / EPA PROTOCOL GAS

Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, CA 92705

Certificate Modification Date: 11/29/2018

Praxair Order Number: 70789714

Part Number: EV NICDOXE78-AS

Fill Date: 11/15/2018

Lot Number: 70086831907

Cylinder Style & Outlet: AS

Cylinder Pressure and Volume: 2000 psig

CGA 590

140 ft3

O₂ 10.11
CO₂ 5.06
CC35521
Exp. 11/20/26
F22018

Certified Concentration

Expiration Date:	11/20/2026	NIST Traceable
Cylinder Number:	CC35521	Expanded Uncertainty
5.06 %	Carbon dioxide	± 0.6 %
10.11 %	Oxygen	± 0.4 %
Balance	Nitrogen	

ProSpec EZ Cert



Certification Information:

Certification Date: 11/20/2018

Term: 96 Months

Expiration Date: 11/20/2026

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.

Do Not Use this Standard if Pressure is less than 100 PSIG.

CO2 responses have been corrected for Oxygen IR Broadening effect. O2 responses have been corrected for CO2 interference.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component:

Carbon dioxide

Requested Concentration: 5 %

Certified Concentration: 5.06 %

Instrument Used: Horiba VIA-510 S/N 20C194WK

Analytical Method: NDIR

Last Multipoint Calibration: 10/23/2018

First Analysis Data:		Date	
Z:	0	R:	5.03
R:	5.02	C:	5.05
Z:	0	C:	5.06
UOM:	%	Mean Test Assay:	5.06 %

Reference Standard:

Type / Cylinder #: GMIS / CC86370

Concentration / Uncertainty: 5.03 % ± 0.493%

Expiration Date: 04/17/2022

Traceable to: SRM # / Sample # / Cylinder #: SRM 1674b / 7-H-07 / FF10631

SRM Concentration / Uncertainty: 6.944% / ± 0.013%

SRM Expiration Date: 06/17/2019

Second Analysis Data:		Date	
Z:	0	R:	0
R:	0	C:	0
Z:	0	C:	0
UOM:	%	Mean Test Assay:	%

2. Component:

Oxygen

Requested Concentration: 10 %

Certified Concentration: 10.11 %

Instrument Used: OXYMAT 5E

Analytical Method: Paramagnetic

Last Multipoint Calibration: 11/05/2018

First Analysis Data:		Date	
Z:	0	R:	9.88
R:	9.88	C:	10.11
Z:	0	C:	10.12
UOM:	%	Mean Test Assay:	10.11 %

Reference Standard:

Type / Cylinder #: NTRM / DT0010384

Concentration / Uncertainty: 9.875 % ± 0.4%

Expiration Date: 11/18/2022

Traceable to: SRM # / Sample # / Cylinder #: NTRM / 170701 / NTRM DT0010384

SRM Concentration / Uncertainty: 9.875% / ± 0.040%

SRM Expiration Date: 11/18/2022

Second Analysis Data:		Date	
Z:	0	R:	0
R:	0	C:	0
Z:	0	C:	0
UOM:	%	Mean Test Assay:	%

Analyzed By

Danielle Burns

Certified By

Jose Vasquez



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PGVPID: F22017

DocNumber: 000115172

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS



Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, CA 92705

Praxair Order Number: 70368965
Customer P. O. Number:
Customer Reference Number:

Fill Date: 9/14/2017
Part Number: NI OX5.5E-AS
Lot Number: 70086725710
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	9/21/2025	NIST Traceable
Cylinder Number:	EB0022954	Analytical Uncertainty:
5.52 %	OXYGEN	± 0.4 %
Balance	NITROGEN	

O2-5.52%
EB0022954
Exp. 9/21/25
F22017

Certification Information: Certification Date: 9/21/2017 Term: 96 Months Expiration Date: 9/21/2025

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: OXYGEN

Requested Concentration: 5.5 %
Certified Concentration: 5.52 %
Instrument Used: PARA 1 OXYMAT 5E
Analytical Method: PARAMAGNETIC
Last Multipoint Calibration: 9/20/2017

Reference Standard Type: GMS
Ref. Std. Cylinder #: SA7781
Ref. Std. Conc: 5.02%
Ref. Std. Traceable to SRM #: 2658a
SRM Sample #: 72-D-28
SRM Cylinder #: CAL018862

First Analysis Data:		Date: 9/21/2017	
Z:	0	R:	5.02
R:	5.02	Z:	0
Z:	0	C:	5.52
UOM:	%	Mean Test Assay:	5.517 %

Second Analysis Data:		Date:	
Z:	0	R:	0
R:	0	Z:	0
Z:	0	C:	0
UOM:	%	Mean Test Assay:	0 %

Analyzed by:

Jenna Lockman

Certified by:

José Vasquez

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JP
10-27-17

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If you have any questions, please contact one of the following individuals by email or phone.

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